

WHAT IS CLAIMED IS:

1. A display device comprising:
 - a light source section which emits a light beam;
 - a spatial light modulation element in which a plurality of pixel portions, each of whose state related to light modulation is changed in accordance with an image signal, are arranged in a two dimensional manner, and which modulates, every each pixel portion, the light beam incident to the plurality of pixel portions from the light source;
 - an image forming optical system for imaging the light beam, including a pixel size adjustment section in which a plurality of beam reduction portions are arranged in a two dimensional manner correspondingly to the plurality of pixel portions, a diameter of the light beam modulated by the pixel portion being reduced by the beam reduction portion corresponding to the pixel portion; and
 - a scanning section, by deflecting a group of the light beams whose diameters are reduced by the pixel size adjustment section in a sub scanning direction, which scans a surface to be scanned of an image display body with the group of the light beams,
 - wherein the plurality of pixel portions are arranged along a column direction and a row direction corresponding to the sub scanning direction and a main scanning direction orthogonal to the sub scanning direction respectively, at least the column direction being inclined with respect to the sub scanning direction by a predetermined inclining-angle, and
 - the inclining-angle is set in accordance with a scanning density of the light beam in the main scanning direction on the surface to be scanned.

2. The display device of claim 1, wherein the inclining-angle is set such that light beams modulated by a plurality of the pixel portions are scanned on the same position on the surface to be scanned.

3. The display device of claim 1, wherein the light source section comprises a red laser light source device which emits a red laser beam, a green laser light source device which emits a green laser beam, and a blue laser light source device which emits a blue laser beam, and

the red laser beam, the green laser beam and the blue laser beam, emitted from the red laser light source device, the green laser light source device and the blue laser light source device, respectively, are modulated by a plurality of spatial light modulation elements, respectively.

4. The display device of claim 2, wherein the light source section comprises a red laser light source device which emits a red laser beam, a green laser light source device which emits a green laser beam, and a blue laser light source device which emits a blue laser beam, wherein

the red laser beam, the green laser beam, and the blue laser beam, emitted from the red laser light source device, the green laser light source device, and the blue laser light source device, respectively, are modulated by a plurality of spatial light modulation elements, respectively.

5. The display device of claim 1, wherein the light source section is a laser light source device, in which GaN semiconductor laser is used as a light source of the laser light source device, and which emits a laser beam whose wavelength is in 400

nm band, and

an emission type screen, provided with a luminophor, which displays an image, is used as the image display body, the luminophor emitting a white light by the laser beam whose wavelength is in 400 nm band being irradiated thereon.

6. The display device of claim 2, wherein the light source section is a laser light source device, in which GaN semiconductor laser is used as a light source of the laser light source device, and which emits a laser beam whose wavelength is in 400 nm band, and

an emission type screen, provided with a luminophor, which displays an image, is used as the image display body, the luminophor emitting a white light by the laser beam whose wavelength is in 400 nm band being irradiated thereon.

7. The display device of claim 1, wherein the light source section is a laser light source device, in which GaN semiconductor laser is used as a light source of the laser light source device, and which emits a laser beam whose wavelength is in 400 nm band, and

a luminophor screen, provided with a red luminophor, a green luminophor, and a blue luminophor at each display pixel, is used as the image display body, the red luminophor emitting a red light, the green luminophor emitting a green light, and the blue luminophor emitting a blue light, by the laser beam whose wavelength is in 400 nm band being irradiated thereon.

8. The display device of claim 2, wherein the light source section is a laser light source device, in which GaN semiconductor laser is used as a light source of the

laser light source device, and which emits a laser beam whose wavelength is in 400 nm band, and

a luminophor screen, provided with a red luminophor, a green luminophor, and a blue luminophor at each display pixel, is used as the image display body, the red luminophor emitting a red light, the green luminophor emitting a green light, and the blue luminophor emitting a blue light, by the laser beam whose wavelength is in 400 nm band being irradiated thereon.

9. The display device of claim 1, wherein the spatial light modulation element is a two dimensional spatial light modulation element in which a plurality of pixel portions enabling light modulation are arranged in a two dimensional manner, and

the light beam emitted from the light source section is modulated by using only a part of the pixel portions of the two dimensional spatial light modulation element.

10. The display device of claim 2, wherein the spatial light modulation element is a two dimensional spatial light modulation element in which a plurality of pixel portions enabling light modulation are arranged in a two dimensional manner, and

the light beam emitted from the light source section is modulated by using only a part of the pixel portions of the two dimensional spatial light modulation element.

11. The display device of claim 1, wherein the spatial light modulation element

is a digital micro mirror device in which a plurality of micro mirrors, each of whose angle of a reflection surface is changable in accordance with an image signal, are arranged in a two dimensional manner on a substrate thereof, and
the light beam emitted from the light source section is modulated by using only a part of the micro mirrors of the digital micro mirror device.

12. The display device of claim 2, wherein the spatial light modulation element is a digital micro mirror device in which a plurality of micro mirrors, each of whose angle of a reflection surface is changable in accordance with an image signal, are arranged in a two dimensional manner on a substrate thereof, and
the light beam emitted from the light source section is modulated by using only a part of the micro mirrors of the digital micro mirror device.

13. The display device of claim 1, wherein the spatial light modulation element is an optical shutter array in which interference type optical shutters are arranged in a two dimensional manner, the interference type optical shutter comprising:
an one of electrodes, disposed to have a predetermined angle with respect to the light beam incident thereto from the light source section,
another of the electrodes, which faces the one of the electrodes, and
a flexible thin plate which is disposed between the other of the electrodes and the one of the electrodes, and which is transparent,
wherein the flexible thin plate is deformed due to coulomb force generated by applying voltage between the other of the electrodes and the one of the electrodes, and
the light beam is modulated by one of the light beam being transmitted

through the flexible thin plate or the light beam being reflected by the flexible thin plate.

14. The display device of claim 2, wherein the spatial light modulation element is an optical shutter array in which interference type optical shutters are arranged in a two dimensional manner, the interference type optical shutter comprising:

an one of electrodes, disposed to have a predetermined angle with respect to the light beam incident thereto from the light source section,

another of the electrodes, which faces the one of the electrodes, and

a flexible thin plate which is disposed between the other of the electrodes and the one of the electrodes, and which is transparent,

wherein the flexible thin plate is deformed due to coulomb force generated by applying voltage between the other of the electrodes and the one of the electrodes, and

the light beam is modulated by one of the light beam being transmitted through the flexible thin plate or the light beam being reflected by the flexible thin plate.

15. A display device comprising:

a light source section which emits a light beam;

an image forming optical system for imaging the light beam;

a spatial light modulation element in which a plurality of pixel portions changed in accordance with an image signal, are arranged in a two dimensional manner, and which modulates, every each pixel portion, the light beam incident to the plurality of pixel portions from the light source; and

a scanning section, which scans a surface to be scanned of an image display body with the light beam modulated by the spatial light modulation element, wherein the plurality of pixel portions are arranged along a column direction and a row direction corresponding to the sub scanning direction and a main scanning direction orthogonal to the sub scanning direction respectively, at least the column direction being inclined with respect to the sub scanning direction by a predetermined inclining-angle, the inclining-angle is set in accordance with a scanning density of the light beam in the main scanning direction on the surface to be scanned, and the inclining-angle is set such that the light beams modulated by a plurality of the pixel portions are scanned on the same position on the surface to be scanned.

16. The display device of claim 15, wherein the spatial light modulation element itself is inclined with respect to the sub scanning direction by the predetermined inclining angle.

17. The display device of claim 15, wherein in the spatial light modulation element, the plurality of the pixel portions are arranged such that each of pixel lines, each having pixel portions arranged along the row direction, is shifted in the row direction by a predetermined pitch.

18. The display device of claim 1 further comprising:
an image control section which generates image signals of N types, N being integer more than or equal to two, corresponding respectively to N different

displayed regions along the sub scanning direction in the surface to be scanned of the image display body, and controls respectively light modulated states of N spatial light modulation elements in accordance with the image signals of N types, wherein

the light beams emitted from the light source sections are respectively irradiated to the N spatial light modulation elements,

a set of N light beams modulated respectively by the N spatial light modulation elements is deflected in the sub scanning direction by the scanning section, and

the N displayed regions on the surface to be scanned are scanned respectively by the set of N light beams at the same time.

19. The display device of claim 1 further comprising:

an image control section which generates line image signals of M types, M being integer more than or equal to two, corresponding respectively to M main scanning lines arranged along the sub scanning direction, the main scanning lines forming the displayed image displayed on the surface to be scanned of the image display body, and controls respectively light modulated states of pixel portions arranged along the main scanning direction in the M spatial light modulation elements in accordance with the line image signals of M types with a modulating period T which is obtained by a modulating period T_L of the main scanning line being multiplied by M, wherein

the light beams emitted from the light source sections in a strobo-emission manner in synchronization with the modulating period T are respectively irradiated to the M spatial light modulation elements successively,

a set of the light beams modulated successively by the M spatial light modulation elements is deflected in the sub scanning direction by the scanning section, and

the surface to be scanned of the image display body is scanned by the set of the light beams.